µFR Card Formatter

Version 1.0
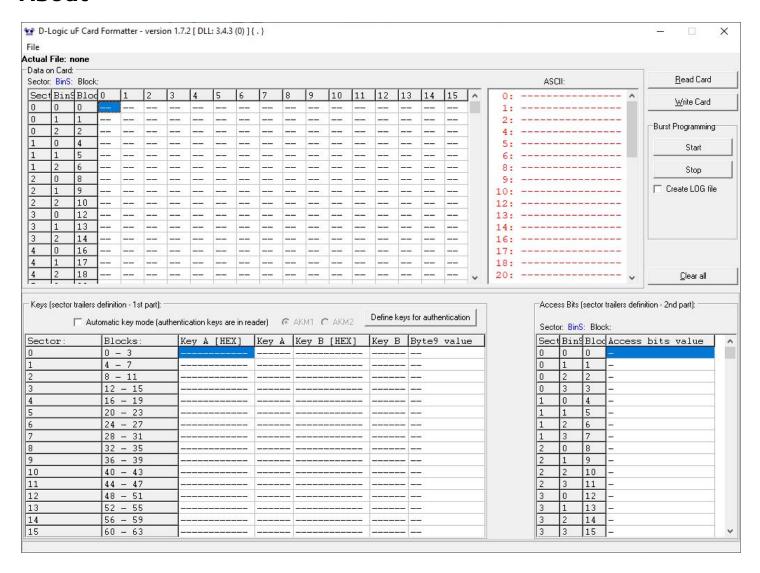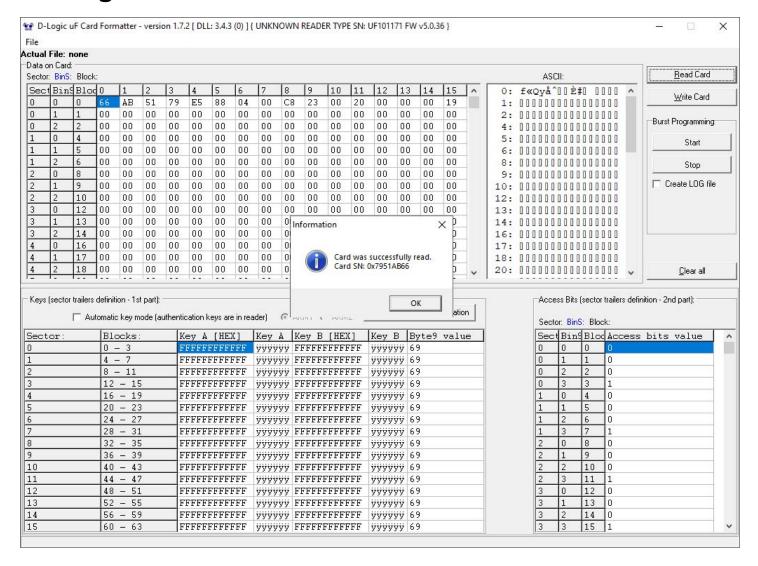
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About

µFR Card Formatter is used for programming MIFARE® Classik 1K cards. You can read and write card data, change authentication keys and access bits and save data to file. Also, burst programming option is included where you can write data to multiple cards one after another.
Application has an option to write keys into the µFR reader for AKM1 (Automatic Key Mode 1) and AKM2 (Automatic Key Mode 2) mode.
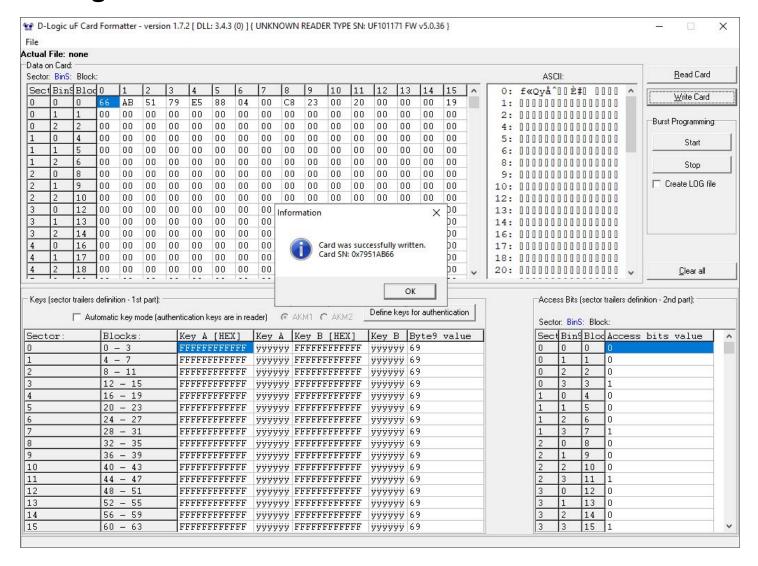
Reading card

For reading card data, put card on the reader and click the '**Read Card**' button. After successfull reading, card data will be displayed in hexadecimal and ASCII format. Displayed card data includes:

- Value of bytes stored in data blocks
- Card keys
- Card access bits
- Card UID in message box after reading

Writing card

For writing content into card, simply fill in the data and click the '**Write Card**' button. You can write every single byte of data blocks, card keys and change the card access bits as shown on the picture above.
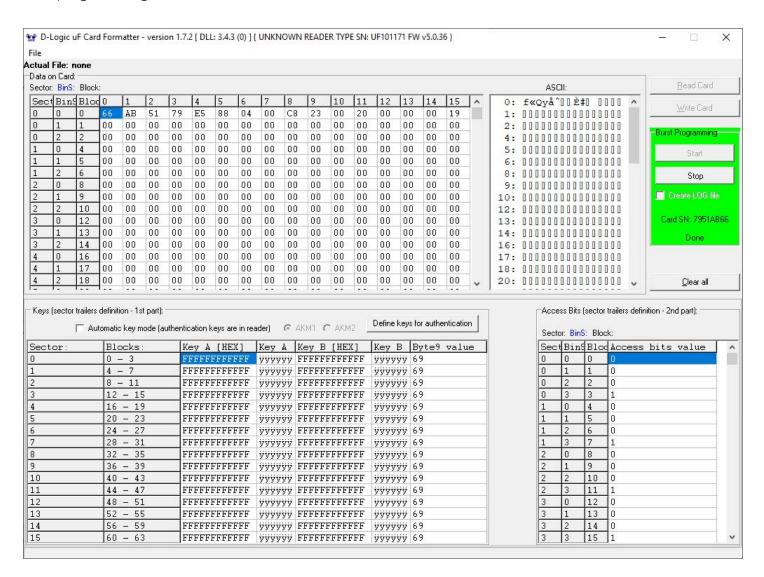
After successful writing you will be able to see a message box with content:
"Card was successfully written. Card SN: 0x????????"

Burst programming

For burst programming, click the '**Start**' button. You will see a message "Connecting to the reader…", wait unitl it changes to "No card!". When you see the "No card!" message, you can put card on the reader and start programming.

After successfull programming you will see a green area with the message "Card SN: ???????? Done". After that you can put another card on the reader for programming. To stop burst programming, simply click the '**Stop**' button.

If you check the '**Create LOG file**' option, 'logs' folder will be created with txt file inside. In txt file all programmed cards will be written.

Authentication

For authentication to card, you can choose between:
- Automatic key mode (authentication keys are in reader)
- Define keys for authentication (Provided key)

For Automatic key mode you can choose between AKM1 and AKM2.
AKM1 stands for AUTOMATIC KEY MODE 1.
AKM2 stands for AUTOMATIC KEY MODE 2.
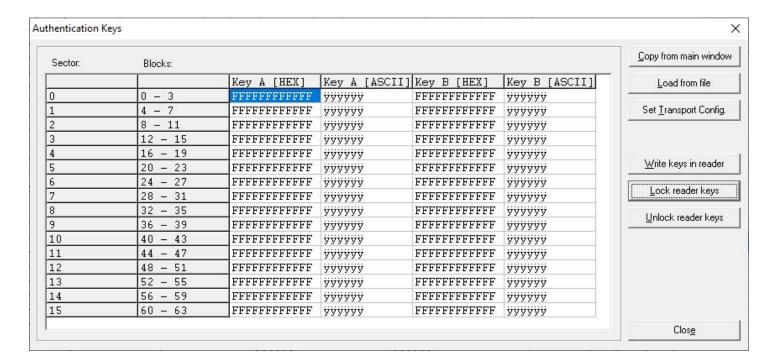For more info about AKM1 and AKM2, please refer to:
µFR Series NFC Reader API
https://git.d-logic.net/nfc-rfid-reader-sdk/ufr-doc/blob/master/uFR%20Series%20NFC%20reader%20API.pdf

If you click on '**Define keys for authentication**' button, this window will be open:

Here you can define provided keys for all sectors in the card in different ways.
- You can copy keys from the main window if you click the 'Copy from main window' button.
- You can load keys from file
- Set transport configuration will set all keys to **FFFFFFFFFFFF** (hexadecimal)
- You can also write keys into reader from this table and choose write method between AKM1 and AKM2
- Also, you can lock or unlock writing keys into the reader providing 8 characters long password.

Input files

Input files example:

On the picture above you can see an example how to create an input file with defined keys, data blocks, access bits and sector trailer byte9 which can be loaded from software.

Revision history

Date	Version	Comment
2020-03-09	1.0	Base document